

TRAUMATIC ENOPHTHALMOS, WITH A CASE.¹

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CHARLES RODGERS, aged twenty-three years, a laborer, born in Pennsylvania, was admitted to the ophthalmic wards of the Philadelphia Hospital, January 4, 1895, with the following history: On December 21, 1894, while on an extended debauch, he was struck by a trolley car and removed to the Chester Hospital, where he remained in a semi-unconscious condition for four days, both eyelids being swollen shut. When he recovered consciousness and was able to open his eyes, he

FIG. 1.



Traumatic enophthalmos; patient looking straight forward. Sunken appearance, resembling a badly-fitting artificial eye, well shown.

noticed diplopia, and that the left eyeball was apparently smaller than the right, and had receded into the orbital cavity. The surgeons who first saw him were unable to find evidence of fracture, the only lesions being several lacerated wounds of the left side of the face and scalp, and severe contusion of the left wrist, ankle and left half of the thorax.

¹ Read before the American Ophthalmological Society, July, 1893.

Recovery from these wounds was uninterrupted. He applied for admission to the Philadelphia Hospital fifteen days after the accident on account of the ocular disturbance.

When I examined him (January 5, 1895), the following conditions were present: Five scars, each about 2.5 cm. long, as follows: one 3 cm. above the left eyebrow, one down and out on the left temple 6 cm. from the external commissure, one at the angle of the lower jaw upon the left side, one at the edge of the scalp on the left side, and one at the vertex. There was a peculiar depression over the right side of the skull posteriorly, at the junction of the parietal with the occipital bone—a depression, however, apparently not connected with his accident.

The left eyeball was sunken 4 mm. deeper into the orbit than the right, and presented the appearances which Nieden so aptly has compared to those produced by an artificial eye. (Fig. 1.) The width of the right palpebral fissure was 13 mm.; of the left palpebral fissure 9 mm. The inter-pupillary distance was 58 mm.

FIG. 2.



Traumatic enophthalmos; patient looking downward. Sinking away of eyeball from the upper lid, and apparent exaggerated downward movement of the globe.

The difference in the level of the corneas measured at their lower borders, when the patient looked directly forward on a horizontal level, was 3.5 mm., the right being higher.

The difference in the level of the upper corneal borders, when the patient looked directly downward, was 5 mm., the left being lower. (Fig. 2.)

The difference in level when the patient looked directly upward was 4 mm., the right being higher.

The difference in level when the patient looked to the left and upward was scant 5 mm., the right being higher.

The difference in level when the patient looked to the right and upward was 4 mm., the right being higher.

Limitation of the movement of the affected eye is indicated by the measurements just recorded, *i. e.*, the left eyeball could not be moved directly upward and to the left or upward and to the right as far as the corresponding globe on the right side, while the downward movement was somewhat exaggerated.¹

There was crossed diplopia in all portions of the field of fixation, the vertical separation of the images being neutralized by a prism of 4° and the lateral separation by one of 2°, when the patient regarded the test object at five metres, his eyes being in the primary position. It was almost impossible to determine the relation of the double images to each other, owing to the patient's exceedingly contradictory answers, but evidently at the time of the original examination there was paresis of the left superior rectus, associated with insufficiency (perhaps paresis) of the interni. About one month later Dr. Oliver examined the muscle balance, with the following result:

0° without correction $\bigcirc$ vertical diplopia of ten degrees, shows heteronymous diplopia of two degrees at five metres distance.

0° without correction $\bigcirc$ horizontal diplopia of ten degrees, shows vertical orthophoria at five metres distance.

0° without correction $\bigcirc$ vertical diplopia of ten degrees, shows heteronymous diplopia of nineteen degrees at thirty-five centimetres.

0° without correction $\bigcirc$ horizontal diplopia of ten degrees $\bigcirc$ nineteen degrees of corrected heteronymous diplopia, shows orthophoria in vertical meridian at thirty-five centimetres.

(The diplopia producing prisms always placed before O. S.)

Within the last five years the literature of traumatic enophthalmos has been reviewed in some detail by a number of observers. Thus, Hansell² observed retraction of the eyeball immediately following injury, and refers to four cases of similar nature. Theodore Beer³ analyzed thirteen cases and describes two others studied by himself. Schapring⁴ contributes a collection of illustrative cases, together with remarks on the pathology of the affection, and adds two new examples of permanent traumatic enophthalmos which he has observed; and Alex. Ogilvy⁵ reports an example of this affection from the clinic of Professor Fuchs, in Vienna, and gives a number of abstracts of previously recorded cases,

¹ W. Lang believes that "the apparent increase in the downward movement of the globe is to be explained by the anatomical arrangement of the inferior rectus, which acts as a depressor of the lower lid. As the two points of insertion of the inferior rectus (the direct into the globe, the indirect into the lower lid) are separated more widely than normal by the sinking of the globe away from the lower lid, the action on the lid is more exaggerated, thus giving rise to the appearance of a greater power of depression than normal."

² Transactions of the Philadelphia County Medical Society, February, 1890.

³ Archives of Ophthalmology, vol. xxii. p. 93.

⁴ Klin. Monatsbl. f. Augenheilk., September, 1893.

⁵ Ophthalmic Review, May, 1894.

exactly the same ones which Beer¹ has collected. Not the least interesting feature, from the literary standpoint of this subject, is the earliest account of this ocular anomaly by Henricus Smetius, in 1575.²

Including the one which I report to-day, about twenty-six cases are upon record, exclusive of non-traumatic examples, of those which are caused by cicatricial bands and adhesive inflammation³ after operative interference in the orbit, of those which follow extirpation of a tumor involving the cervical sympathetic,⁴ and, finally, of those in which there is a monolateral, non-traumatic enophthalmos, changing into exophthalmos when the head is bent forward, such cases, for example, as have been reported by Robert Sattler,⁵ Gessner,⁶ and others.

The various theories which have been advanced to explain this condition may be summarized as follows:

1. Cicatricial contraction of the retrobulbar connective tissue following periostitis and inflammation (Gessner), or cicatricial adhesions of the eyeball itself (Löw).

2. Atrophy of the orbital cellular tissue on account of a disturbance of nutrition due to a lesion of a nerve centre or tract, and particularly of the sympathetic; or of the trigeminus (Beer's theory).

3. Paralysis of Müller's orbital muscle from lesion of the sympathetic (Schapring).

4. Fracture of the orbital walls (inner or under), causing enlargement of the orbital space and allowing retraction or sinking of the eyeball (Langenbeck, Tweedy, Von Becker, Lang, etc.).

Schapring contends, and no doubt with good reason, that the name "enophthalmos" should be retained for those cases in which the retraction of the eyeball occurs indirectly from a nerve lesion; for those which result from a direct mechanical influence, *e. g.*, extensive fracture or perforation of the orbital walls, he prefers the term "Dislocation" or "Luxation."

My own case presented no evidence of fracture (other than the diplopia); certainly there was no infraction of the orbital walls sufficiently great to allow sinking or misplacement of the eye. It is best explained by that hypothesis which assumes that retraction of the eye may be caused by lesion of the sympathetic; indeed, this is not only a hypothesis, but demonstrable by experiments on animals.

¹ Loc. cit.

² See Schapring, loc. cit., and *Centralbl. f. prakt. Augenheilk.*, vol. xiii. p. 191.

³ Del Monte: *Osservazione e note Cliniche*, 1871, p. 71, and Litteneuer: *Gaz. des Hôpitaux*, 1873, i. p. 243.

⁴ Matlakowski: *Centralbl. f. prakt. Augenheilk.*, 1881, xv. p. 387.

⁵ *THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, 1885, n. s. 89, p. 456.

⁶ *Centralbl. f. prakt. Augenheilk.*, 1889, xiii. p. 161.

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A CASE OF DERMOID TUMOR OF BOTH OVARIES COMPLICATED BY A DEPOSIT OF BONE UPON EACH SIDE OF THE TRUE PELVIS, HAVING NO CONNECTION WITH THE TUMORS.¹

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ALTHOUGH the presence of calcareous matter in and around the ovary has been frequently demonstrated by abdominal surgeons of large experience, a careful examination of the masses removed has almost invariably proved that they were examples of simple calcification, and not of true ossification as had been supposed. Macroscopically, it is impossible to make a positive diagnosis. These calcareous masses resemble very closely irregular lumps of bone. They may be irregularly nodular in outline, of such a firm structure as to require the use of a saw before they can be divided, and yet on cross-section they present no regularity

¹ Read before the College of Physicians, Philadelphia, October 2, 1895.